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PORTABLE ANT NESTS.

ADELE M. FIELDE.

IN order to keep ants under continued observation, and at the same time to change occasionally the domicile of the observer, it is necessary to have portable nests. The transportation of either the Lubbock or the Janet nest is made inconvenient by the water used for the isolation of the ants in the former, and by the considerable weight of the latter.

Six colonies can be successfully carried on journeys of several hours or days by the use of a case made of half-inch pine boards and dovetailed at the corners, with a door hinged upon its lower side and held shut by two buttons at its upper edge. The case measures on the inside $16\frac{3}{4}$ inches in length, $6\frac{1}{4}$ inches in horizontal depth, and $4\frac{3}{4}$ inches in height. Three shelves, each one-fourth of an inch thick, are mortised into the ends of the case, making four compartments, each one inch high. Several holes are bored in the door of the case and in the side opposite the door, to admit fresh air. The case is carried by a leather handle fastened lengthwise to its top, and it is just filled by the six nests hereinafter described.

Of the six nests, there are two of each pattern, A, B, and C. An A and a B nest together fill a shelf, while a C nest fills a shelf alone.

The nests are all built of clear glass, and their parts are readily cut by any glazier. The joinings are made with Le Page's liquid glue, which must thoroughly dry before the nests are used. The cost of material and the amount of labor required in making these nests are much less than for either the Lubbock or the Janet pattern.

The floors are panes of "double thick" glass, under which is laid a thick sheet of white blotting paper of the same size as the glass, to give opacity, elasticity, and a background against which the ants are easily seen. The blotting paper should not

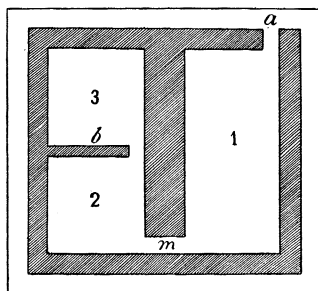
be fastened to the glass, as the latter must sometimes be raised in order to get a view of the ants from below.

The walls stand half an inch from the edges of the base-pane, for the greater security of the superstructure when the nest is being lifted. The walls are built of strips of "double thick" glass, half an inch wide, two horizontal layers in every wall giving a perfectly level top. Apertures three-eighths of an inch wide are left in the walls at points marked *a* on the plans. These apertures admit the end of a three-eighths-inch glass tube, which may be used as a safe bridge between nests when ants are to be made to pass from one nest into another. When not in use, the apertures are closed with plugs of cotton. The outside of the walls, after thorough drying, are painted black, to secure within the nest the darkness in which ants like to keep their young.

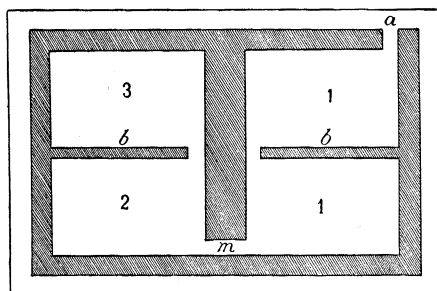
The main partitions in the ant-dwelling take part with the walls in the support of separate roof-panes, and they are therefore twice as wide as are the walls. Passageways (marked *m* on the plans) permit the ants to go from one room to another, as is necessary when a room is to be cleaned. The admission of strong light will insure the removal of the ant family to the darkened chamber adjoining. The passageways may be from one-fourth to one-half inch in width, and they should be covered with very thin glass, well glued on.

The tops of the walls and main partitions are exactly covered with coarse Turkish toweling, cut in strips twice as wide as the base on which it lies, and doubled so that its raw edges meet in the middle of the glass it doubly covers. The under layer of the toweling is glued to the glass, and it performs the double office of keeping the ants within the nest and of admitting sufficient fresh air for their breathing. Just over the passageways the toweling is left free, so that it may there be lifted for observation of what is within. After the toweling is laid on, the rooms have a uniform depth of less than half an inch, and a hand lens can be focused upon any of their inmates. The toweling being elastic and level, the roof-panes, of thin, clear glass, lie closely upon it. They are not fastened down.

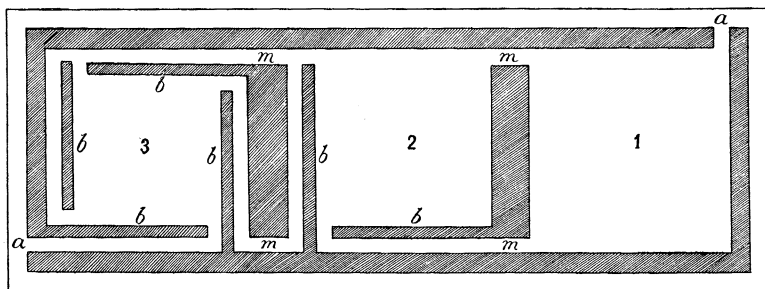
The roof-panes reach the center of the main partitions and



A. $6\frac{1}{2} \times 6$ in. ($16\frac{1}{2} \times 15\frac{1}{2}$ C.)



B. 10×6 in. ($25\frac{1}{2} \times 15\frac{1}{2}$ C.)



C. $16\frac{1}{2} \times 6$ in. ($42 \times 15\frac{1}{2}$ C.)

1. Food-room.

2. Nursery.

3. Sponge-room.

a. Entrance.

b. Screen.

m. Passage.

project one-fourth of an inch beyond the walls. All the rooms except the food-room have an outer roofing of thick dark blotting paper, which should be lifted only when actual study of the ants is proceeding.

In the rooms numbered 1 the ants have, as in the Janet nests, a chance to range in the light and to seek food, of which it is well to put in the smallest sufficient quantity and several kinds. If the ants are made to move into the darkened food-room, leaving the other rooms free for cleaning, the passages (*m*) may, during the cleaning, be plugged with cotton.

In room 3 a soft, fine sponge, clean and wet, and less than one-fourth of an inch thick, should nearly cover the floor, leaving a passage all around it next the walls. This furnishes drink to the ants and moisture to the air of their dwelling. If the ant young are in the egg or the larval stage, or if the temperature is high, the floor of room 2 should likewise be covered with wet sponge; but if the young are in cocoons, or if the temperature is very low, then room 2 should have a layer of wadding instead of sponge. The ants generally choose damp places for the eggs and larvae, and dry places for the cocoons or pupae.

The screens (marked *b*) are substitutes for the ant-runs used in the ground, and they gratify the disposition of the ant to keep close to cover in going about in the nest. They are made in the same way as are the walls, but are only one-fourth of an inch thick, and are not topped with toweling.

The A nest, with base $6\frac{1}{2} \times 6$ inches, is designed for a colony of very small ants, or for a few large ants. The B nest, with base 10×6 inches, affords a home for a somewhat larger family. The C nest, $16\frac{1}{2} \times 6$ inches, can be used for a multiplying and dividing colony, or for observing the activities of restless species. The ants should never be greatly crowded in their habitation.

The ants in my nests appear sleek and healthy. I have found these nests easier than others to keep free from the molds that grow from particles of food that the ants convey from the food-room to every other part of their nest. These nests also lend themselves readily to experimental uses in studying the instincts of their occupants.

When the nests are to be carried on a journey the roofs are securely fastened down by sewing narrow strips of cheese cloth around the nest in such a way as to prevent the slipping of the roof-pane. The fastenings must not exclude fresh air. Having fastened the roof-panes each in place, the nests are put upon the appropriate shelves in the case, where they may be further secured by bits of wadding above the roof-panes and at the ends of the shelves.

The weight of my case, with its six enclosed nests packed for travel, is less than fifteen pounds. The strong local attachments of the ants are undisturbed by their so journeying, and at the end of the journey the study of their life processes may be speedily resumed.

MARINE BIOLOGICAL LABORATORY,
WOODS HOLL, September, 1900.